



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

09/680,829

10/06/2000

David O'Connell

673-1009

2651

23644 7590 04/16/2007
BARNES & THORNBURG LLP
P.O. BOX 2786
CHICAGO, IL 60690-2786

EXAMINER

MEW, KEVIN D

ART UNIT

PAPER NUMBER

2616

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
--	-----------	---------------

3 MONTHS

04/16/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

09/680,829

Applicant(s)

O'CONNELL ET AL.

Examiner

Kevin Mew

Art Unit

2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 January 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-54 is/are pending in the application.
- 4a) Of the above claim(s) 48 and 49 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 54 is/are allowed.
- 6) ☒ Claim(s) 1-11, 27-31, 33-36, 44-47 and 50-53 is/are rejected.
- 7) ☒ Claim(s) 12-26, 32 and 37-43 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Detailed Action

Response to Amendment

1. Applicant's Arguments/Remarks filed 1/31/2007 have been fully considered. Claims 48-49 have been cancelled by applicant, and claims 1-47 and 50-54 are currently pending.

Claim Objections

2. Claim 53 is objected to because of the following informalities:

In lines 2, claim 53, replace "centralised" with "centralized."

In line 3, claim 53, replace "standardised" with "standardized."

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-4, 7-11, 27-31, 33-36, 44-47, 50-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schuster et al. (USP 6,363,053) in view of McKee et al. (USP 5,477,531).

Regarding claims 1 & 34, Schuster discloses a computer software and hardware product to perform a method of monitoring quality of service (collecting quality of service information from network traffic, see lines 21-22, col. 3, lines 38-44, col. 11 and abstract) in communications

over a packet-based network between two points (in communications over a packet-based network between source PC 166 and destination 192, see col. 7, lines 25-35 and Fig. 3), at least one of which is an endpoint (source PC 166, Fig. 3),

wherein said endpoint is a telecommunications device enabling a user to participate in a telecommunication session over the network (source PC 166 is the endpoint enabling a user to participate in a telecommunication session with the destination 192 over the network, Fig. 3);

the method comprising the steps of:

transmitting test packets across the network (transmitting test traffic from a source to a destination, see lines 24-25, col. 3) and monitoring transmission characteristics of said test packets (monitoring characteristics of the test traffic transmitted by the source and characteristics of the test traffic received by the destination, see lines 21-30, col. 3);

dynamically calculating from said transmission characteristics a measure of network performance (identifying quality of service information by comparing characteristics of the test traffic transmitted by the source and characteristics of the test traffic received by the destination, see lines 21-30, col. 3); and

Schustér does not explicitly show providing at said telecommunications device a dynamic indication of the network performance based on said calculation during said telecommunications session.

However, McKee discloses a station (element 11, Fig. 1) with a graphical display (element 22, Fig. 1) that provides dynamic graphical indication of the network performance data such as the calculation of mean round-trip delay based on a list of test packets transmitted from the station to a target station during the telecommunications session between the test station and

Art Unit: 2616

the target station (col. 4, lines 24-45 and col. 7, lines 14-35 and Fig. 2; the telecommunications session includes a sequence of test packets transmitted and received, element 51, Fig. 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the quality of service measuring method and system of Schuster with the teaching of McKee in providing a dynamic graphical display of network performance data for the sequence of test packets transmitted from the test station to the target station such that Schuster will provide at source PC 166 a dynamic indication of the network performance based on said calculation during said telecommunications session.

The motivation to do so is to provide a graphical display to better analyze the various transmission characteristics such as the mean round-trip delay between two nodes on a network.

Regarding claims 2 & 35, Schuster discloses a computer software and hardware product to perform the method according to claims 1 and 34, respectively, wherein said transmission characteristics are selected from packet loss, transmission delay, and a combination thereof (QoS characteristics may consist of measurable attributes such as packet loss and latency, see lines 4-7, col.10).

Regarding claim 3, Schuster discloses a method according to claim 2, wherein said transmission characteristics include both packet loss and transmission delay (see lines 18-23, col. 12).

Regarding claim 4, Schuster discloses a method according to claim 1, wherein the indication of the network performance is provided by means of a visual display associated with the endpoint (see lines 5-8, col. 15).

Regarding claim 7, Schuster discloses a method according to claim 1, wherein said test packets include a first series of test packets which issue from a source location to a destination location (transmitting test traffic from a source port to an echo port, see lines 33-34, col. 3) and a second series of test packets which issue from said destination location to said source location in response to said first series of test packets (the echo port then transmits echo traffic back to the source port, wherein the echo traffic corresponds to the test traffic, see lines 35-38, col. 3), whereby said network characteristics may be monitored by comparing the first and second series of test packets (identifies quality of service information by comparing characteristics of the test traffic to characteristics of the echo traffic, see lines 38-41, col. 3).

Regarding claim 8, Schuster discloses a method according to claim 7, wherein the first series of test packets include local source timestamp information and wherein the second series of test packets include local destination timestamp information, the difference between said local source timestamp information and local destination timestamp information being used to calculate a delay characteristic of the network (a timestamp may be used to accurately record the time of transmission and receipt if a packet transmission count is taken at the source and a packet count is taken at the source if the traffic is returned from an echo port, lines 29-37, col. 11).

Regarding claim 9, Schuster discloses a method according to claim 8, wherein the delay characteristic is the absolute delay in echo-free connections (T_a) between the source and destination locations over the network (test traffic is transmitted by a source to the unused port, see lines 36-64, col. 10).

Regarding claim 10, Schuster discloses a method according to claim 7, wherein a measure of packet loss is obtained by comparing the packets issued from the source location and the packets received back at the source location (packet loss can be measured by the number of packets received to the number of packets originally transmitted, see lines 18-20, col. 12 and 62-65, col. 13).

Regarding claim 11, Schuster discloses a method according to claim 9, wherein a measure of packet loss is obtained by comparing the packets issued from the source location and the packets received back at the source location (packet loss can be measured by the number of packets received to the number of packets originally transmitted, see lines 18-20, col. 12 and 62-65, col. 13).

Regarding claims 27 & 44, Schuster discloses computer software and hardware product to perform a method according to claims 1 & 34, respectively, wherein the step of providing a dynamic indication of the network performance includes providing, at the request of a user, an indication of one or more of said transmission characteristics (comparing measured quality of

Art Unit: 2616

service characteristics with the specified quality of service characteristics, thereby determining conformance to the service level agreement, see lines 5-9, col. 4 and lines 38-44, col. 11).

Regarding claim 28, Schuster discloses a method according to claim 27, wherein the request of the user is made by means of an input device associated with the endpoint and the indication is provided by means of a display device associated with the endpoint (see lines 1-8, col. 15 and lines 38-44, col. 11).

Regarding claims 29 & 45, Schuster discloses a computer software with instructions to execute a method according to claims 1 and 34, respectively, further comprising the step of logging the network transmission characteristics (collecting QoS characteristics, see lines 41-45, col. 9 and lines 38-44, col. 11).

Regarding claims 30 & 46, Schuster discloses a computer software with instructions to execute the method according to claims 1 & 34, respectively, further comprising the step of logging the results of said calculation (a report is generated to indicate a percentage by which an observed and identified QoS characteristic deviated from the QoS characteristic as specified in the SLA, see lines 30-38, col. 9, 23-26, 33-35, col. 10 and lines 38-44, col. 11).

Regarding claim 31, Schuster discloses a method according to claim 30, wherein the step of logging the results of said calculation occurs only when said results are within a

Art Unit: 2616

predetermined range (periods of non-compliance may be cumulatively measured, see lines 32-41, col. 12).

Regarding claims 33 & 47, Schuster discloses a method according to claims 1 & 34, respectively, further comprising the step of adjusting a billing record for a user in dependence on the results of said calculation (see lines 37-41, col. 12 and lines 38-44, col. 11).

Regarding claim 36, Schuster discloses a computer software and hardware product according to claim 35, wherein the transmission characteristics include the absolute delay in echo-free connections (T_a) between source and destination locations over the network (test traffic is transmitted by a source to the unused port, see lines 36-64, col. 10 and lines 38-44, col. 11 and abstract), obtained by comparing local timestamp information from source and destination locations on the network (a timestamp may be used to accurately record the time of transmission and receipt if a packet transmission count is taken at the source and a packet count is taken at the source if the traffic is returned from an echo port, lines 29-37, col. 11) and a measure of packet loss obtained by comparing the packets issued from the source location and the packets received back at the source location (packet loss can be measured by the number of packets received to the number of packets originally transmitted, see lines 18-20, col. 12 and 62-65, col. 13).

Regarding claim 50, Schuster discloses a system for monitoring quality of service in communications over a packet-based network (an apparatus for collecting quality of service

information from network traffic over a packet-based network, see lines 22-30, col. 3 and 38-44, col. 11 and abstract), comprising:

a source endpoint connected to the network via which a user may transmit communication signals over the network (a general purpose computer, connected to the network, transmits an IP header from a first network device, see lines 10-17, col. 4) wherein said endpoint is a telecommunication device enabling a user to participate in a telecommunication session over the network (source PC 166 is the endpoint enabling a user to participate in a telecommunication session with the destination 192 over the network, Fig. 3);

a test packet generator for transmitting test packets across the network a test packet receiver for receiving test packets from the network (the set of instructions cause the general purpose computer to transmit a first IP packet from a first network device to a second network device, see lines 14-17, col. 4);

a processor for measuring transmission characteristics of said test packets and for calculating from said transmission characteristics a measure of network performance (a comparator compares the measured quality of service characteristics with the specified quality service characteristics to determine conformance to the service level agreement, see lines 5-9, col. 4); and

Schuster does not explicitly show an output device associated with said endpoint for providing a dynamic indication of the network performance based on said calculation.

However, McKee discloses a station (element 11, Fig. 1) with a graphical display (element 22, Fig. 1) that provides dynamic graphical indication of the network performance data such as the calculation of mean round-trip delay based on a list of test packets transmitted from

Art Unit: 2616

the station to a target station during the telecommunications session between the test station and the target station (col. 4, lines 24-45 and col. 7, lines 14-35 and Fig. 2; the telecommunications session includes a sequence of test packets transmitted and received, element 51, Fig. 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the quality of service measuring method and system of Schuster with the teaching of McKee in providing a dynamic graphical display of network performance data for the sequence of test packets transmitted from the test station to the target station such that Schuster will provide at source PC 166 a dynamic indication of the network performance based on said calculation during said telecommunications session.

The motivation to do so is to provide a graphical display to better analyze the various transmission characteristics such as the mean round-trip delay between two nodes on a network.

Regarding claim 51, Schuster discloses a system according to claim 50, wherein said test packet generator includes a timestamp generator for adding a local source timestamp to said test packets (see lines 29-44, col. 11).

Regarding claim 52, Schuster discloses a system according to claim 51, further comprising a destination endpoint with which said source endpoint is in communication over the network (see lines 29-38, col. 11), said destination endpoint having associated therewith: a test packet receiver for receiving test packets from the network (an echo or unused port for returning test traffic to the source, see lines 29-38, col. 9); a timestamp generator for adding a local destination timestamp to said received test packets (see lines 29-44, col. 11); and

a test packet re-transmitter for re-transmitting said received test packets with said local destination timestamp back to their source (an echo or unused port for returning test traffic to the source, see lines 29-38, col. 9).

Regarding claim 53, Schuster discloses a system according to claim 52, further comprising a centralized time server in communication with the network for generating a standardized time and providing same to said source and destination endpoints (see lines 29-37, col. 11).

4. Claim 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schuster in view of McKee, and in further view of Vaid et al. (USP 6,520,131).

Regarding claims 5 & 6, Schuster and McKee discloses all the aspects of the claimed invention set forth in the rejection of claims, except fails to disclose the indication of the network performance is provided by means of an audio signal and a discrete signal emitted at the source endpoint when the value of the transmission characteristic passes a predetermined value.

However, Vaid discloses a method and apparatus for monitoring QoS in which alarms will be triggered when a QoS characteristic threshold is reached (see lines 23-55, col. 27 and Fig. 19).

Therefore, it would have been obvious to one ordinary skill in the art at the time the invention was made to combine the QoS monitoring apparatus of Schuster with the alarm portion of the GUI interface of QoS management tool of Vaid such that an aural signal will be generated to alert a transmission threshold is reached such as the QoS management tool taught by Vaid.

The motivation to do so is to provide an audible signal to signify that the threshold of a certain transmission characteristic has been reached because it will provide an instant alert to bring attention to the network administrator on what transmission characteristic creates a bottleneck on the network performance.

Response to Arguments

5. Applicant's arguments filed 1/31/2007 have been fully considered but they are not persuasive.

Applicant argued on page 1, fourth paragraph of the Remarks that Schuster fails to teach or suggest "source PC 166 is being used as a telecommunication device," the examiner respectfully disagrees. It is noted that only a telecommunications device, not a voice or speech communication device is claimed in claim 1. It is well known in the art that the term "telecommunication" means communicating pictures, data, or sound using radio signals or electrical or optical lines. The source PC 166 disclosed in Schuster is able to transmit test traffic data to destination device 192 (col. 9, lines 14-16) and thus reads on the "telecommunications device" as recited in claim 1. It is clearly shown in Fig. 3 of Schuster that source PC 166 is an endpoint that source PC 166 qualifies as being a telecommunications endpoint. Applicant further allegedly argued on page 2, first paragraph of the Remarks that destination 192 is an echo port and cannot be considered as a endpoint participating in a telecommunications session, the examiner respectfully disagrees. Schuster discloses in col. 9, lines 14-16 and Fig. 3 that destination 192 is a computer being able to receive from and echo back test traffic to source PC

166, destination 192 clearly qualifies as a telecommunication endpoint being involved in a telecommunications session.

Applicant further argued on page 2, second paragraph of the Remarks that Schuster fails to teach or suggest “test communication during telecommunications session involving endpoint,” the examiner respectfully disagrees. As already mentioned above, Schuster discloses in col. 9, lines 14-16 and Fig. 3 that destination 192 is a computer being able to receive from and echo back test traffic to source PC 166. Therefore, source PC 166 and destination PC 192 qualify as telecommunication endpoints being involved in a telecommunications session for the reason that “telecommunication” just means communicating pictures, data, or sound using radio signals or electrical or optical lines, and PCs 166, 192 are endpoints being able to transmit and receive test traffic data.

In light of the foregoing, claims 1-4, 7-11, 27-31, 33-36, 44-47, 50-53 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Schuster et al. (USP 6,363,053) in view of McKee et al. (USP 5,477,531), and claim 5-6 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Schuster in view of McKee, and in further view of Vaid et al. (USP 6,520,131).

Allowable Subject Matter

6. Claim 54 is allowed.
7. Claims 12-26, 32, 37-43 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

In claim 12, a method according to claim 11, wherein the measure of packet loss and the identity of the communications codec being employed by the endpoint are used to calculate an equipment impairment factor (le).

In claim 32, a method according to claim 30, wherein the step of logging also includes logging the fact that a communications connection over the network has been lost.

In claim 37, a computer program product according to claim 36, wherein the measure of packet loss and the identity of the communications codec being employed by the endpoint are used to calculate an equipment impairment factor (le).

In claim 38, a method according to claim 14, wherein the delay impairment factor (Idd) is given by the formulae:

(i) for $T_a < 100\text{ms}$,

$I_{dd} = 0$; and

(ii) for $T_a \Rightarrow 100\text{ ms}$,

$$I_{dd} = 25 * ((1+X^6)^{1/6} - 3 * (1+ (X/3)^6)^{1/6} + 2)$$

Where $X = (\log(T_a/100))/\log(2)$

In claim 54, a method of monitoring quality of service in communications over a packet-based network between two points, at least one of which is an endpoint, comprising the steps of:

calculating from said measured difference the absolute delay in echo-free connections (Ta) between the source and destination locations over the network and thereby calculating a delay impairment factor.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Art Unit: 2616

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Mew whose telephone number is 571-272-3141. The examiner can normally be reached on 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on 571-272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kevin Mew
Work Group 2616

KM

Seema S. Rao
SEEMA S. RAO 4/12/07
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600